

Corrosion Inhibitors for Sour Oilfield Environment (H₂S Corrosion)

[Saviour A. Umoren](#), [Moses M. Solomon](#), [Viswanathan S. Saji](#)

Book Editor(s): [Viswanathan S. Saji](#), [Saviour A. Umoren](#)

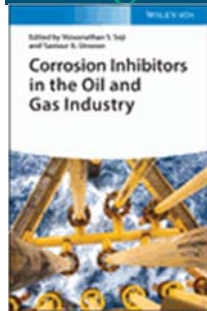
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Summary

Lower-grade steel materials are the most commonly used construction materials for oil and gas wells due to their low cost and high performance. However, they are susceptible to corrosion when they come in contact with corrosive environments that are highly acidic. In oil wells, particularly deep oil wells, hydrogen sulfide (H₂S) is commonly found. The dissolution of H₂S gas in produced water makes the fluid corrosive. The use of corrosion inhibitors is perhaps the most practical and cost-effective means of controlling corrosion of low carbon steels in the sour environment. In this chapter, typical corrosion inhibitors used in oil and gas fields to control the internal corrosion of oilfield equipment caused by H₂S are being examined. The inhibitors found to be effective are polar functional compounds, with many being based on nitrogen-containing compounds, such as amines, imidazolines, and quaternary ammonium salts. Drawbacks of these compounds in practical applications and potentials of future developments are discussed.

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